

### Remarks

Prior to this amendment, claims 1-5, 7-10 and 12-13 were pending in this case. The pending Office Action rejected the claims, asserting, in pertinent part, that:

(1) Claims 1-5, 7-10 and 12-13 are rejected under 35 USC 112, 1st paragraph, allegedly because in claims 1-3 and 7 the use of the term "oleic palmitamide" is not supported by the specification, although the term "oleyl palmitamide" is supported by the specification. The word "oleic" is hereby amended to "oleyl" at relevant points in the noted, pending claims.

(2) Claims 1, 2 and 3 and their dependents are allegedly indefinite in that "it is unclear [whether] the first and second outer surfaces is referring to the film or to the polymeric resin." Changes to attend to this point have been made hereby.

(3) The use of the term "Nylon" in Claim 13 was objected to, and correction to "nylon" (lower case 'n') was requested. This point has been attended to by the present amendment.

(4) Claims 1, 4-5 and 7-10 were rejected under 35 USC 102(b) as being allegedly anticipated by Creekmore et al. 4,112,158 ("Creekmore '158"). The Action alleges that "it is inherent for the film of Chang [Creekmore?] to have the structures as in claims 4 and 9 since the primary amide is erucamide and the secondary amide is stearamide." This point is addressed in detail below.

(5) Claims 2-3 and 12-13 were rejected under 35 USC 103(a) as being allegedly obvious in view of Creekmore '158. The Action alleges that "it would have been obvious to one of ordinary skill in the art to make the film with the limitations of the primary and secondary amide ppm since it has been held that discovering an optimum value of a result effective variable involves only routine skill in the art." The Action goes on to assert that "although Creekmore discloses a polyethylene material, the reference does not specify if the material is high or low density. It is the Examiner's interpretation that polyethylene is expected to [be] either low density or high density, which renders the polyethylene disclosed by Creekmore to meet the claim limitation of... claim 3." This point is addressed in detail below.

(6) The Action also withdrew various rejections asserted in the previous Action under 35 USC 102(b), 103(a) and 112, in view of Applicant's previous Amendment.

Rejection of claims 1, 4-5 and 7-10 as allegedly anticipated by Creekmore '158; and  
Rejection of claims 2-3 and 12-13 as allegedly obvious in view of Creekmore '158

The sole basis for the prior art rejections in the pending Action is Creekmore '158. In rejecting claims 1, 4-5 and 7-10 as allegedly anticipated by Creekmore, the Action asserts that "it is inherent for the film of Chang [Creekmore?] to have the structures as in claims 4 and 9 since the primary amide is erucamide and the secondary amide is stearamide." In rejecting claims 2-3 and 12-13 as allegedly obvious

in view of Creekmore '158, the Action asserts that "it would have been obvious to one of ordinary skill in the art to make the film with the limitations of the primary and secondary amide ppm since it has been held that discovering an optimum value of a result effective variable involves only routine skill in the art." The Action goes on to assert that "although Creekmore discloses a polyethylene material, the reference does not specify if the material is high or low density. It is the Examiner's interpretation that polyethylene is expected to [be] either low density or high density, which renders the polyethylene disclosed by Creekmore to meet the claim limitation of ... claim 3."

In addressing these points, it is noted that claims 2 and 3 are amended to incorporate therein recitations similar to those in previously presented claim 4. Claim 1 and Claim 4 have been canceled without prejudice to again presenting those claims or claims of similar scope, whether in a continuation application or otherwise. Similarly, claim 7 has been amended to incorporate therein recitations similar to those in previously presented claim 9. Claim 9 has been canceled without prejudice. While the Applicant respectfully disagrees with the basis for the "anticipation" rejection of previously presented claims 1, 4-5 and 7-10, given the present amendment, the anticipation rejections of previously-presented independent claims 1, 4 and 7 are inapplicable to the presently amended independent claims 2, 3 and 7, leaving only the issue of alleged obviousness in view of Creekmore '158.

In this regard, the Applicant respectfully traverses the assertion that Creekmore '158 rendered obvious the previously presented independent claims and their dependents, but more particularly, the Applicant respectfully submits that Creekmore '158 neither teaches nor suggests the combination of features required by amended independent claims 2, 3 and 7, and their dependents.

As amended, the independent claims 2, 3 and 7 recite, in pertinent part, the following:

- (1) a migratory additive comprising a blend of secondary amides about 1 part oleyl palmitamide and 1 part stearyl erucamide,
- (2) between 25 ppm and 5000 ppm of a primary amide of general structure  $R-CO-NH_2$  and between 25 ppm and 5000 ppm of at least one secondary amide of general structure  $R-CO-NH-R'$ ,
- (3) wherein the R and R' can include any of erucic, oleic, palmitic, behenic, capric, lauric or stearic functional groups of between 9 to 30 carbon atoms,
- (4) such that the ratio of primary amide to secondary amide is between about 1:1 and 1:3.

This combination of features, among others required by the amended independent claims, is absent from Creekmore '158, and is not suggested thereby.

As noted previously, Creekmore '158 fails to teach or suggest the combination of primary and second amides required by the claims, particularly in the ranges required.

In addition, Creekmore contains no suggestion of any awareness of the unique chemical interaction that occurs between the secondary amide and the primary amide in the claimed invention. The larger molecular weight secondary amides, with their limited mobility and only one free hydrogen, show no indication of being able to form hydrogen to oxygen bonding with neighboring secondary amides. When examined by infrared spectroscopy, the oleyl palmitamide molecule in such a film shows only one hydrogen-nitrogen peak at  $1648\text{ cm}^{-1}$ . (An interaction with a neighboring secondary amide would show up as a second peak due to the shift in energy as the hydrogen forms a weak bond with a neighboring oleyl palmitamide molecule. This is true for stearyl erucamide, stearyl behenamide, etc.) In the primary amide, erucamide or, for example, oleamide, the smaller molecular weight and the presence of two hydrogen atoms allows significant levels of hydrogen to oxygen weak bonding with neighboring erucamide or oleamide molecules. This is observed in the formation of two new peaks on the FT-IR at  $1650$  and  $1638\text{ cm}^{-1}$  in addition to the  $1648\text{ cm}^{-1}$  peak. But this is still a very mobile molecule, which does not bond very well to the surface of the polymeric film and is thus prone to slip transfer, solvent dissolution or other types of mechanical or chemical slip removal.

In the claimed invention, however, the primary amide, erucamide or oleamide, will form hydrogen to oxygen bonds to the less mobile neighboring oleyl palmitamide when used in a blend. The higher molecular weight oleyl palmitamide then acts as an anchor to better secure the erucamide (or oleamide) to the surface of the polymeric film by chemically bonding by hydrogen to oxygen atoms and anchoring the normally mobile erucamide (or oleamide) at the surface. This phenomenon is what reduces the slip transfer or removal of the primary amide from the film, helping the film retain its coefficient of friction or surface lubricity. This can be observed by infrared spectroscopy. While the larger molecular weight secondary amides are still considered migratory, as are the primary amides, they have a significantly slower bloom rate than the primary amides, in the range of days or even weeks, as opposed to hours. The lower molecular weight primary amides help speed the bloom rate of the secondary amides, and thus they are mutually complimentary to one another, such that the claimed combination offers unique properties not provided by either component by itself, and neither taught nor suggested by the cited references.

The claimed combination of features is not only novel over Creekmore '158, it is also not suggested by Creekmore '158 and presents technical advantages over the reference as well.

Still further, Creekmore teaches that the use of the fatty acid amides is exclusively for anti-blocking purposes, and there is no mention of surface modification to effect the frictional aspect of the film. Anti-blocking purposes and COF purposes are separate and different: the ASTM (American Society for Testing and Materials) provides separately defined terms and tests for COF and for blocking. In particular, ASTM's D1894, Standard Test Method for Static and Kinetic Coefficients of Friction of Plastic Film and Sheeting - defines "coefficient of friction as the force, usually gravitational, acting perpendicular to the two

[film] surfaces in contact. This coefficient is a measure of the relative difficulty with which the surface of one material will slide over an adjoining surface or itself." In contrast, ASTM's D3354, Standard Test Method for Blocking Load of Plastic Film by the Parallel Plate Method, defines blocking "unwanted adhesion existing between layers of plastic film...Adhesion of the touching surfaces induced by temperature or pressure, or both." Also with regard to Creekmore, there is no teaching in Creekmore with regard to frictional properties; and there is no teaching of a blend of primary and second in the range of COFs described and claimed by the Applicant.

Further evidence of the non-obviousness of the claimed aspects of the invention, the desirability of the invention, and the absence of such features from the prior art, is provided by the previously presented article, N. Savargaonkar et al., "Slip Agents: Extended Performance Range For Polyolefin Films", Plastics Technology, April 2006. (Article also available at: [www.plasticstechnology.com/articles/200604fa2.html](http://www.plasticstechnology.com/articles/200604fa2.html)). That article points out the desirability of the COF control features that are discussed above in connection with the amended claims: the fact that those combinations of features were not available using conventional agents; the commercial desirability of such features; and the marked differences between migratory and non-migratory agents. (It is noted that the Ampacet Product 102794 cited in the article as new is in fact secondary amide (stearyl erucamide) alone, without any primary amide (erucamide) added.)

It is also noted that Creekmore '158 has no teaching of polyethylene apart from its use as an additive. Creekmore only indicates polyethylene as an processing additive, along with several other ingredients to be added at very low levels, and never discusses a film that is substantially composed of polyethylene. More particularly, Creekmore by its explicit teachings is directed to films composed substantially of rubber.

Creekmore teaches away from the use of polyethylene in films like that presently claimed by the Applicants, stating, in pertinent part, as follows: "[I]n various applications, the dispersed PE films has caused defects to occur in the end-product curing use and is, therefore, not a suitable overwrap. ... In other applications, PE film can present problems. For the production of high impact polystyrene (HIPS) polybutadiene rubber (BR) or butadiene/styrene rubber (SBR) is added directly to the styrene monomer. The overwrap must be characterized by being soluble in styrene, and, therefore, PE film is not considered suitable for this application." Creekmore '158 contains no recitation of a polyethylene layer or film having opposed first and second outer surfaces and the particular chemical characteristics required by the amended independent claims 2, 3 and 7, and their dependents.

In summary, Creekmore '158 neither teaches nor suggests the combinations of features required by amended independent claims 2, 3, and 7, and their dependents.

The Applicant thus respectfully submits that the rejections in view of Creekmore '158 should be withdrawn.

Conclusions

The present response is deemed to attend to each point raised in the outstanding Action. The present response amends the claims to more particularly claim features of the present invention. No new matter has been added, and support for the amended claims is found in the specification and drawings as filed. The Examiner is respectfully requested to allow the claims and pass the application through to issuance. Should questions arise, the Examiner is respectfully invited to contact the undersigned.

Respectfully submitted,

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